DOCUMENT RESUME

ED 209 980 HE 014 469

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TITLE Capital Formation in Higher Education.
INSTITUTION American Council on Education, Washington, D.C. Policy Analysis Service.
PUB DATE May 81
NOTE 56p.; Background report prepared for the Business-Higher Education Forum (Task Force on Capital Formation). Some tables may not reproduce well.

EDRS PRICE MF01/PC03 Plus Postage.
DESCRIPTORS College Role; *Economic Factors; Educational Equipment; Educational Facilities; *Educational Finance; Financial Needs; *Financial Problems; *Financial Support; *Higher Education; Industry; Needs Assessment; Private Financial Support; Research Projects; Research Utilization; *School Business Relationship

ABSTRACT

The need for new capital in higher education and major areas where the interests of the business and higher education communities are aligned are considered. Higher education is a major employer and makes a large contribution to the gross national product. Human capital has become the accepted term for referring to the contribution of education, advances in knowledge, and research and development to economic growth. The funding, performance, and utilization of research and development links industry and higher education directly in capital investment in knowledge. Universities and colleges (and their associated federally-funded research and development centers) perform 50 percent of the basic research, 15 percent of the applied research, and 2 percent of the development work in the United States. Higher education is beginning the 1980s with a seriously eroded capital base in that: expansion of educational facilities has slowed down, but buildings and equipment need to be renewed; equipment used in teaching and research at colleges is much older than that used in industry; faculty are losing purchasing power faster than professional workers generally; and financial reserves are being drawn down faster than they are being replenished. Recommendations include: advocating greater national support for research and development; supporting enhanced tax incentives to donors to promote voluntary contributions to colleges; and undertaking a major baseline study of the capital stock of higher education, its location, condition, and utilization, and its adequacy for meeting U.S. educational needs in the 1980s. A bibliography is appended. (SW)

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CAPITAL FORMATION IN HIGHER EDUCATION

Background Report
Prepared for the
Business-Higher Education Forum
(Task Force on Capital Formation)

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by
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Washington, D.C.

May 1981

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CAPITAL FORMATION IN HIGHER EDUCATION*

I. Purpose of this Report

Today, Americans confront the stunning realization that over the last decade we have dropped from number one worldwide to fifth in the standard of living of the average citizen. Our relative economic well-being slipped because of slow growth in economic output, meager increases in productivity, and higher inflation in the United States than in most of the other developed nations. A significant factor in this poor showing is the low and still declining rate of capital formation in this country.

And the wrenching global switch from low-cost to high-cost energy in the span of a few short years was more devasting to the American industrial infrastructure than it was to that of other nations long used to high energy costs.

But the nation has now resolved to improve our domestic economic well-being and to regain our competitiveness in international markets. We have determined to revitalize our economy, to re-industrialize the production base, and to replace the plant and equipment rendered inefficient by the energy price shock. All of this requires new capital formation.

Capital formation is a central, urgent economic concern. But while the need for capital is clear to profit-oriented industry, awareness of the need is only beginning to emerge in higher education and in the nonprofit sector generally.

National economic policies that are designed to increase the rate of capital investment in the private sector usually operate through the federal income tax structure. Consequently, these policies do not reach the tax-exempt nonprofit sector. Different policies are needed for the nonprofit sector.

This report shows that:

- Just as new capital is needed by industry, so it is also needed by higher education;
- There are important linkages in the creation of new capital between industry and higher education;
- Out of these linkages arise shared policy concerns;

*The authors gratefully acknowledge the advice and suggestions provided by Tom Stauffer, Herman Liebling, Frances Topping, Judith Stich and Hans Jenny in preparing this report.

- National economic policies designed to stimulate capital investment in the profit sector must be re-designed to extend to the nonprofit education sector.

This report identifies major areas where the interests of the business and higher education communities are aligned and offers recommendations for concerted action.

II. The Higher Education Industry

Higher education is a major industry. Annual revenues in 1980-81 will exceed $62 billion. There are 3,200 nonprofit, accredited, public and private colleges and universities in the United States. (See Exhibit 1.)

Higher education employs approximately two million people, (Exhibit 2) of whom about one third work as professors and instructional or research staff, and over one third work as nonprofessional support staff. In relative size measured by the value added to the gross national product, higher education rivals the U.S. oil-refining, automobile or banking industries.

The mission of higher education is teaching, research, and public service:

- Colleges and universities teach over 12 million students in full- and part-time academic programs held on campuses, and reach at least 10 million additional people through off-campus and extension programs.

- Colleges and universities perform one-half of the basic research conducted in the United States.

- Colleges and universities provide health and social services, bring cultural programs, offer libraries, enhance the intellectual and artistic life of their communities, and strengthen humanistic values.

Exhibit 1

Trend in Total Current Fund Revenues
(Billions of Dollars)

	All Colleges and Universities
FY 1977[a)]	$43.7
FY 1978[a)]	47.3
FY 1979[a)]	51.9
FY 1980 estimated[b)]	56.8
FY 1981 estimated[b)]	62.2
FY 1982 estimated[b)]	68.1

Source: a) National Center for Education Statistics, U.S. Department of Education, July 1980.

b) Assumes a 9.5 percent annual rate of increase.

Exhibit 2

Employment in Higher Education

	1976 Number	1976 Percent	1981 Number (Estimate)
Total Employees	1,863,790	100%	1,994,255
Executive/Administrative/ Managerial	101,263	5.4	108,351
Instructional/Research (Instructor Level and above)	633,210	34.0	677,534
Instructional/Research Assistants	160,086	8.6	171,292
Specialists/Support	178,560	9.6	191,069
Nonprofessional	790,67[illegible]	42.5	846,018

Source: 1976: National Center for Education Statistics, Department of Education, data from the survey of Employees in Institutions of Higher Education, 1976-77, published in The Digest of Educational Statistics, 1980.

1980: Estimate is based on doubling of the increase in constant dollar expenditures between FY197[illegible] and 1979 to make an allowance for inflation-related salary increases. A 7.0 percent increase in employment is estimated between 1979 and 1981. (An alternate method would assume that employment increases with enrollment, and assuming 1981 enrollment is the same as 1980, employment would have increased 8.2 percent over the same period.)

III. Higher Education's Contribution to Economic Growth

Higher education is the major producer of intellectual capital. Intellectual capital is a major source of increased productivity and economic growth.

To parallel discussions of the importance of (physical) capital formation in U.S. economic growth, "human capital" has become the accepted term for referring to the contribution of education, advances in knowledge, and research and development to economic growth.

Many economic studies have demonstrated the importance of education and research and development in stimulating capital formation and productivity. While this is understood historically, its relation to the current slump in capital growth and productivity is less well understood. Investment in education has continued and, in fact, swelled at the undergraduate and continuing education levels. Research and development, adjusted for inflation, had held somewhat steady over the last decade. Notable differences are a declining confidence in the outcomes of secondary schooling and less public support for graduate education despite manifest needs.

Advances in Knowledge

"Growth accounting" is a framework for estimating the contributions to overall economic growth made by different factors of production. When this type of analysis was first introduced it was found that increases in the amounts of capital and labor used in production could not account for the growth of total output. The unexplained residual, that is the increase in output per unit of input, or productivity increases, were attributed to advances in knowledge -- which were shown to be major sources of economic growth.

As growth accounting has become more sophisticated, more factors have been broken out of the unexplained residual to explain the growth in total output, including changes in the age and sex composition of the labor force, changes in the efficiency of allocation of resources derived from changes in the industrial structure, economics of scale, and changes in regulatory requirements affecting the costs of production.

Even after more recent refinements in the measurement of the contributions made by the different sources to the growth in total output, there is still a residual labeled advances in knowledge and small miscellaneous factors not elsewhere classified. If those miscellaneous factors are both positive and negative and offset each other, then the full residual can be characterized as advances in knowledge.

Advances in knowledge are accounted for separately from increases in education but they result in large measure from investment in education -- either directly or indirectly as education teaches people to learn throughout their productive lives.

Note that the growth accounting framework measures only imperfectly the total contribution of education and research to the increase in economic output, because part of it is associated with more years of education of the workers, part is incorporated in capital investment as new technology, and part is found in an unexplained residual calculation labeled advances in knowledge and not elsewhere classified. Nonetheless, education and advances in knowledge have been identified as major sources of economic growth.

Edward Denison, in his landmark work Accounting for U.S. Economic Growth, published by the Brookings Institution in 1974, estimates that increases in the aggregate level of education accounted for almost one-third of the contribution of labor of 1.30 percent to the standardized U.S. national income annual growth rate of 4.00 percent from 1948 to 1969. But increased labor and capital inputs accounted for only a little over half of the growth rate of the economy over that period, 2.09 percent out of the 4.00 percent total. Increases in output per unit of input, that is increases in productivity, accounted for the remainder, or half of the growth rate. And advances in knowledge accounted for close to two-thirds of the increase in productivity, or for 1.19 percent of the 1.91 percent attributable to increased productivity. Counting both increases in the amount of labor and capital and growth in productivity per unit of labor and capital, education and knowledge advances accounted for 40 percent of the growth rate of national income in the post-World War II era through 1969. "The contribution of education...was the consequence of greatly increasing investment in human capital."

Denison's earlier findings about the contribution of education and advances to knowledge to economic growth have been confirmed and extended in more recent work. (See Exhibit 3.)

Between 1969 and 1973, education and advances in knowledge were leading positive actions influencing growth. Between 1973 and 1976, education continued its positive contribution, but advances in knowledge had declined. Denison has used this growth accounting framework to analyze the causes of the recent slowdown in U.S. economic growth in a book published by Brookings in 1979: Accounting for Slower Economic Growth in the United States in the 1970's. Denison documents a fundamental change in the pattern of growth after 1973 but concludes after detailed analysis of seventeen different explanations that no single hypothesis explains the slowdown. "What happened is, to be blunt, a mystery." ... "It is possible, perhaps even probable, that everything went wrong at once..."

The economic growth rate and productivity performance worsened despite continued increases in the education of workers. Denison speculates that several developments may have combined to slow the advance of knowledge and other developments to retard the incorporation of new knowledge into production -- including a smaller share of the national product devoted to research and development; and an increased lag in the application of new knowledge because of an increase in the average age of capital. These may, in turn, have been affected by inflation, regulation, energy costs, and taxes.

Businessmen and public policy makers in the current administration are more sure than the academic economists about the explanations for the slowdown and the actions needed to restore growth in developing policies to stimulate capital investment by industry.

Research and Development

The nation invested close to $52 billion in research and development in 1979. About 13 percent of this total was spent for basic research, 23 percent for applied research, and 64 percent for development.

Research and development is a major shared interest of industry and higher education. The funding, performance, and utilization of research and development links industry and higher education directly in capital investment in knowledge.

Universities and colleges (and their associated federally-funded research and development centers) perform 50 percent of the basic research in the United States. They account for 15 percent of applied research, but only two percent of the development work.

Exhibit 3

Table 8-3. Sources of Growth of Actual National Income per Person Employed, Selected Periods, 1929–76
Contributions to growth rates in percentage points

Item	Longer periods			Shorter periods						
	1929–76	1929–48	1948–73	1929–41	1941–48	1948–53	1953–64	1964–69	1969–73	1973–76
National income per person employed	1.60	1.21	2.12	1.09[a]	1.41[a]	2.60	2.42	1.45	1.50	−0.22
Total factor input	0.45	0.25	0.60	0.34	0.12	1.12	0.75	0.09	0.37	0.44
Labor	0.27	0.41	0.20	0.61	0.12	0.74	0.25	−0.08	0.02	0.11
Hours	−0.24	−0.22	−0.24	−0.18	−0.28	−0.02	−0.30	−0.26	−0.33	−0.46
Average hours	−0.51	−0.68	−0.40	−0.71	−0.65	−0.23	−0.39	−0.48	−0.49	−0.58
Efficiency offset	0.19	0.39	0.07	0.49	0.25	0.10	0.00	0.11	0.12	0.12
Intergroup shift offset	0.08	0.07	0.09	0.04	0.12	0.11	0.09	0.11	0.04	0.00
Age-sex composition	−0.08	0.01	−0.14	0.04	−0.04	0.06	−0.08	−0.29	−0.33	−0.19
Education	0.41	0.38	0.41	0.42	0.30	0.36	0.40	0.37	0.50	0.67
Unallocated	0.18	0.24	0.17	0.33	0.14	0.34	0.23	0.10	0.18	0.09
Capital	0.23	−0.11	0.45	−0.23	0.07	0.45	0.52	0.27	0.39	0.35
Inventories	0.04	0.00	0.06	−0.02	0.04	0.08	0.05	0.07	0.04	0.02
Nonresidential structures and equipment	0.07	−0.11	0.18	−0.16	−0.02	0.16	0.19	0.15	0.20	0.18
Dwellings	0.11	0.01	0.18	−0.02	0.04	0.21	0.22	0.08	0.11	0.18
International assets	0.01	−0.01	0.03	−0.03	0.01	0.00	0.06	−0.03	0.04	−0.03
Land	−0.05	−0.05	−0.05	−0.04	−0.07	−0.07	−0.02	−0.10	−0.04	−0.02
Output per unit of input	1.15	0.96	1.52	0.75	1.29	1.48	1.67	1.36	1.13	−0.66
Advances in knowledge and n.e.c.	0.72	0.45	1.10	0.24	0.81	1.03	1.06	1.01	1.22	−0.59
Improved resource allocation	0.26	0.28	0.29	0.20	0.39	0.40	0.26	0.35	0.11	−0.01
Farm	0.21	0.26	0.20	0.18	0.39	0.31	0.20	0.19	0.06	0.01
Nonfarm self-employment	0.05	0.02	0.09	0.02	0.00	0.09	0.06	0.16	0.05	−0.02
Legal and human environment	−0.04	0.00	−0.04	0.00	0.00	0.00	−0.01	−0.05	−0.13	−0.34
Pollution abatement	−0.02	0.00	−0.02	0.00	0.00	0.00	0.00	−0.02	−0.08	−0.18
Worker safety and health	−0.01	0.00	−0.01	0.00	0.00	0.00	0.00	0.00	−0.04	−0.09
Dishonesty and crime	−0.01	0.00	−0.01	0.00	0.00	0.00	−0.01	−0.03	−0.01	−0.07
Dwellings occupancy ratio	0.01	0.02	−0.01	0.01	0.03	−0.02	−0.01	0.01	0.00	0.02
Economies of scale	0.27	0.21	0.32	0.12	0.30	0.36	0.24	0.43	0.32	0.19
Irregular factors	−0.07	0.00	−0.14	0.18	−0.30	−0.29	0.13	−0.39	−0.39	0.07
Weather in farming	0.00	−0.01	0.00	−0.02	0.02	0.00	−0.01	0.00	0.01	−0.02
Labor disputes	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00
Intensity of demand	−0.07	0.01	−0.14	0.20	−0.32	−0.29	0.14	−0.39	−0.41	0.09

Sources: Derived from tables 2-2, 2-6, 2-9, 3-1, 4-1, 6-3, 6-4, 7-1, and G-2.
n.e.c. Not elsewhere classified.
a. Based on data excluding work relief employees. When based on data including work relief employees, growth rates are 0.89 in 1929–41 and 1.76 in 1941–48.

Reprinted from: Edward F. Denison, Accounting for Slower Economic Growth: The United States in the 1970's, Brookings Institution, 1979, p.108.

Industry, with a complementary profile, performs 16 percent of the basis research, 58 percent of the applied research and 85 percent of the development work.

The total support by industry of research performed by institutions of higher education is significant. In 1979, industry invested $160 million in research and development performed by the colleges and universities -- up $10 million from the previous year. In 1978, the total of $150 million was divided so that $85 million was spent for basic research, $55 billion for applied research, and $10 million for development.

In terms of shares of support, however, industry currently funds just over three percent of the Research and Development performed on college campuses, up slightly from the early 1970s, but well below half of the eight percent share funded by industry in the late 1960s.

Industry supports university research directly, by funding through grants and contracts, and by making contributions of equipment. Industry also supports research indirectly by providing general support grants to the institutions.

The important linkages between industry and higher education in research run in both directions: basic research performed by the universities undergirds the applied research and development performed by industry. Universities perform research for industry on contract, and they train the researchers, scientists, and engineers who work for industry. Communications between researchers in industry and in academic institutions speeds the introduction of improved technology and new products which are incorporated in new industrial capital formation.

Investment in research has enhanced the quality of teaching. Funds received by the institutions through research grants and contracts have financed the expansion and improvements of research facilities and the purchase of equipment. They have been used to attract faculty and research staff and to support their salaries; they have supplied funds for student research assistants.

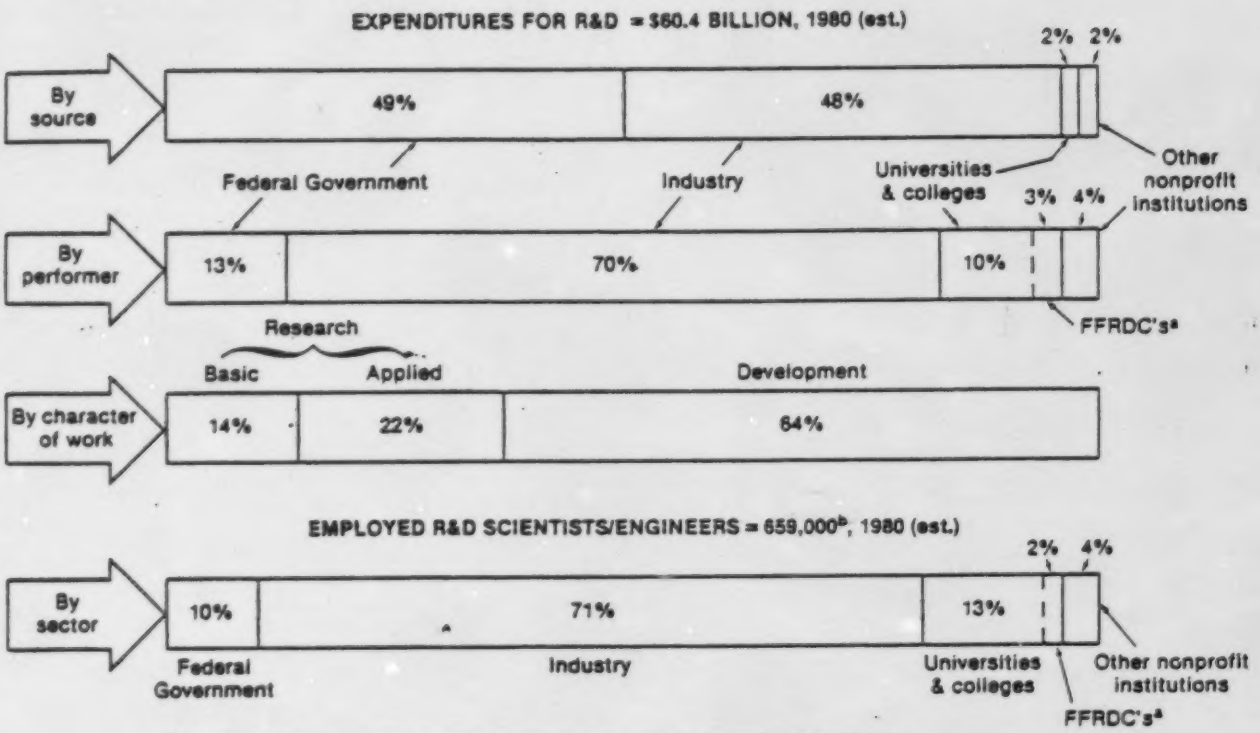
Slackening U.S. investment in basic research in the early 1970's has been cited as a possible source of the subsequent decline in the rate of productivity growth. Indeed, real constant dollar spending for basic research in 1977 was no higher than it had been earlier. From 1953 to 1967, real investment in basic research grew 12.5 percent per year. Then from 1967 to 1975, it actually declined in real terms by 0.6 percent per year. It has picked up again, but is today barely above levels of more than a decade ago.

Research and development as a share of gross national product has declined throughout the decade of the 1970s. In the late 1960s, the United States invested close to half again as great a share of GNP in research as West Germany and twice as great a share as Japan. But by the end of the 1970, the U.S. had been matched by West Germany and almost matched by Japan. Since a far smaller share of the R&D of Japan and Germany is spent for military objectives, it is likely that in relationship to GNP an even larger share is devoted to civilian industrial products and services by our international market competitors, than by the U.S.

As the growth of federal support slackened for research and development performed by the colleges and universities, the institutions themselves continued to increase significantly the funding for this activity. The self-funded research increased from $345 million in 1967 to well over $700 million in the late 1970's. And the dollars of federal R&D funds per dollar of institutional funds slipped from $4.20 to $2.80. (See Exhibits 4-6.)

Exhibit 4

The national R&D effort

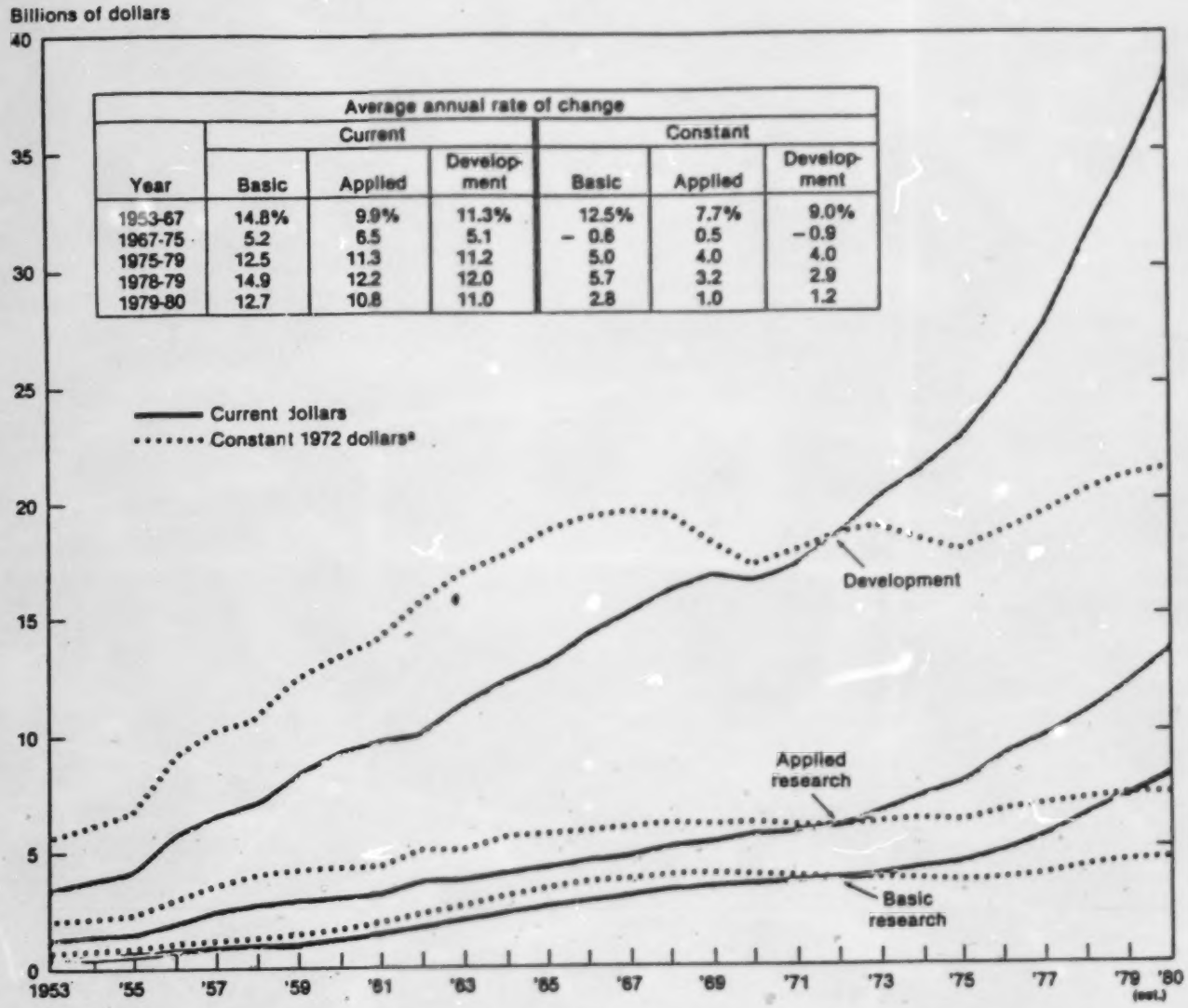


[a]Federally funded research and development centers administered by universities and colleges.
[b]Full-time-equivalents.
SOURCE: National Science Foundation; appendix tables 5, 6, 7, 9, 11, and 14.

Reprinted from: National Science Foundation, National Patterns of Science and Technology Resources, 1980. (Washington: GPO, NSF 80-308) p. 2.

Exhibit 5

National R&D spending by character of work



Average annual rate of change						
	Current			Constant		
Year	Basic	Applied	Development	Basic	Applied	Development
1953-67	14.8%	9.9%	11.3%	12.5%	7.7%	9.0%
1967-75	5.2	6.5	5.1	– 0.6	0.5	– 0.9
1975-79	12.5	11.3	11.2	5.0	4.0	4.0
1978-79	14.9	12.2	12.0	5.7	3.2	2.9
1979-80	12.7	10.8	11.0	2.8	1.0	1.2

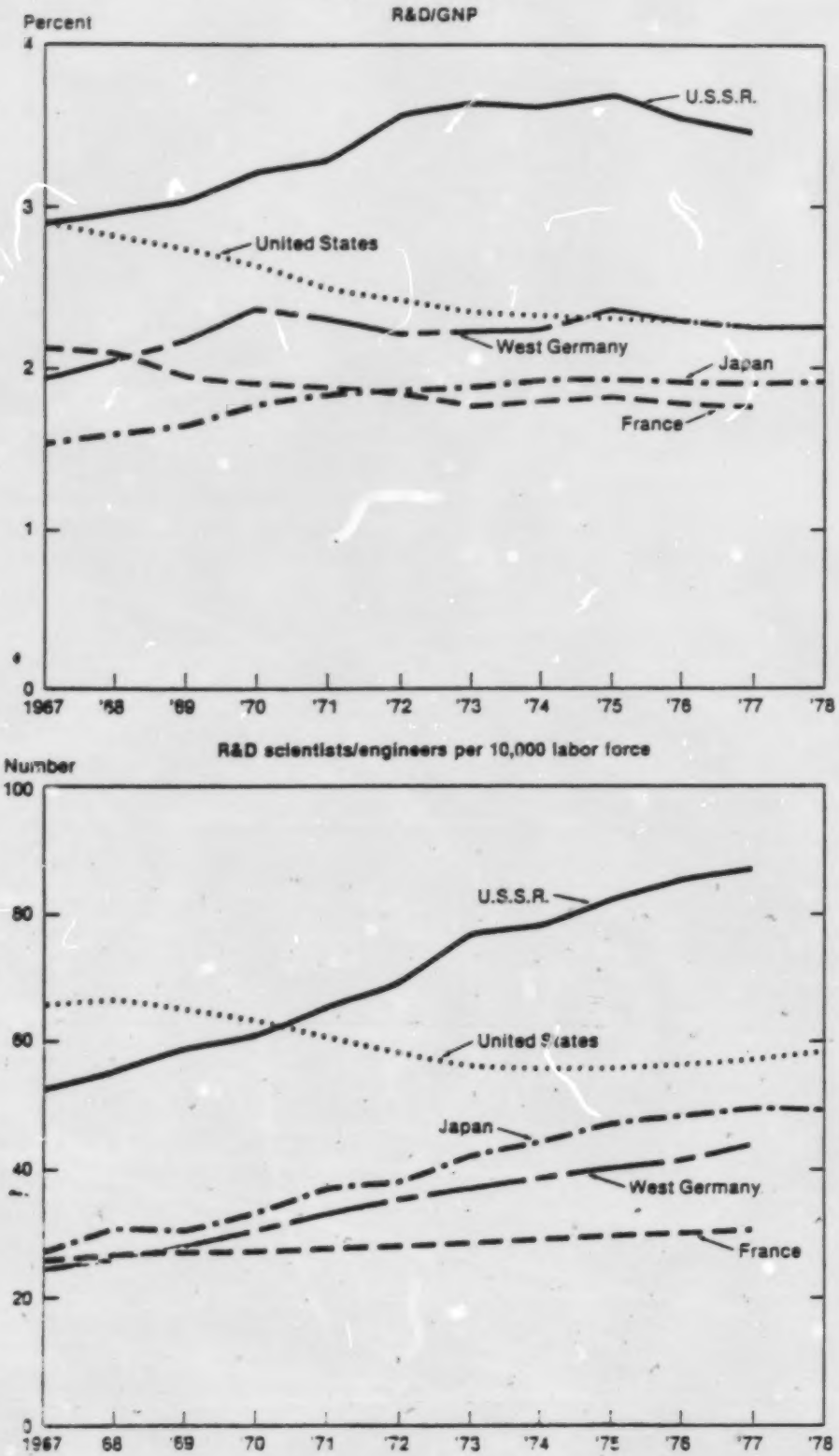
[a]Based on GNP implicit price deflator

SOURCE: National Science Foundation; appendix tables 7, 8, and 11

Reprinted from: National Science Foundation, National Patterns of Science and Technology Resources, 1980. (Washington: GPO, NSF 80-308)

Exhibit 6

International R&D resources related to other economic variables



SOURCES: National Science Foundation, Organization for Economic Cooperation and Development, and Robert Campbell (Indiana University); appendix tables 17 and 18.

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Reprinted from: National Science Foundation, National Patterns of Science and Technology Resources, 1980. (Washington: GPO, NSF 30-308)

IV. Accounting for Capital in Higher Education

Higher education institutions are fundamentally different from business firms in the way their financial accounts are structured. Corporate accounts have a bottom line and college and university fund accounts typically do not. Historically, the system of fund accounting for the higher education institutions evolved to meet their fiduciary requirements of reporting separately to each of the different sources of financial support. Many different funds are generally grouped under five major headings: current funds, plant funds, endowment funds, life income and annuity funds. Further distinctions are carefully maintained to indicate if funds are restricted or unrestricted in use by the donors.

Thus, determining the financial conditions of the institutions is very complex. A vast amount of work has been done in recent years on ways to consolidate accounts and to develop financial indicators and ratios to use is assessing the financial conditions of the colleges and universities. While the measures that have been developed so far are very useful, they provide dangerously incomplete descriptions of the financial conditions of the institutions if they do not incorporate information on the adequacy of the capital base.

Information about the capital base of higher education is woefully incomplete. Generating better data about the amount, condition, and replacement costs of the existing capital stock to use in determining the future capital needs of higher education institutions requires modifications in the system of accounting.

A further historical characteristic of the finance of most higher education institutions is that they do not depreciate their assets--that is the cost of operations reported does not reflect the cost of the capital, physical facilities and equipment, used in providing the educational services. This characteristic developed because donors expected that giving the funds for a building would provide free use to the students.

College tuitions are rarely set to recover a portion of the capital cost. College tuitions thus contrast with the prices set by industry which must cover the cost of capital if firms are going to stay in business. Indeed, pricing systems in higher education for both the public and private institutions are related to current operating costs only. This is true for both those tuitions calculated as the residuals needed to balance budgets and those set as a proportion of costs. The pricing of higher education is predicated on the capital being provided by other sources, separate from current operations. The cost of capital

is worked into current operating costs in higher education only if the institutions have to borrow money and the debt service must be covered by tuition or other current revenues.

If the capital is not provided from other sources and if renewal and replacement of the capital has to be covered by current operating revenues, it will require a basic change in the structure of financing of higher education. This in turn has massive implications for tuition, student financial aid, and access to educational opportunity.

Capital as a Share of College Costs

Higher education is conventionally regarded as highly labor intensive in comparison with other sectors of the economy because colleges spend upwards of 50, 60, or 70 percent of their budgets on salaries of faculty and staff. There is a concommitant belief that capital is not a very significant input in the production of educational services.

But a comparison of the importance of capital in the production of educational services with the capital/labor ratio of other sectors is seriously distorted because the value of the capital used in higher education is not generally even in the annual operating budgets of the institutions.

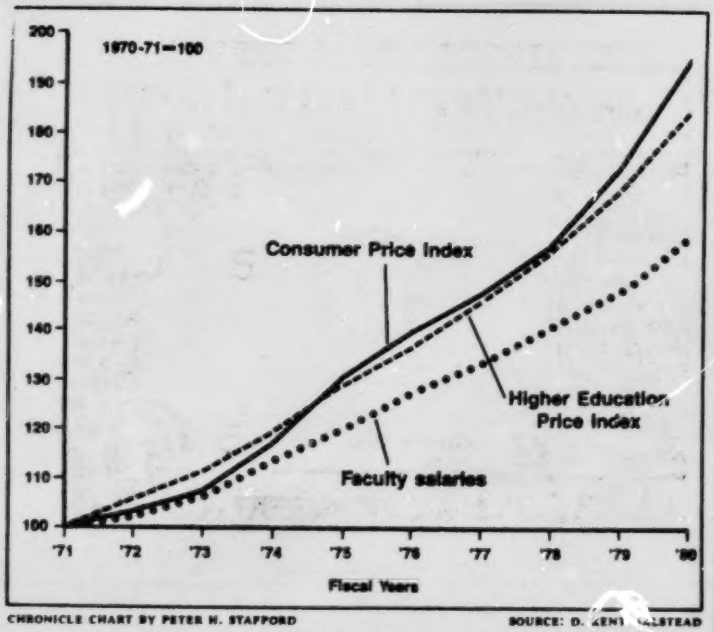
Fuller integration of the capital side of higher education into the current operating side is likely to lead to revision of the characterizations of the degree of labor intensity of higher education in comparison with other sectors -- and to more attention to the capital needs of colleges and universities.

V. Impact of Inflation on Higher Education

As in industry, inflation has had a devastating effect on the capital base for higher education. The rapid cost increases have resulted in greater and greater difficulty in balancing budgets, with current fund deficits avoided in some cases only by drawing down reserves and borrowing from endowments.

Inflation has pushed up the uncontrollable costs, while driving down the real value of faculty and staff salaries. Professional salaries have been slow to increase during the last ten years, while energy costs have been the most rapidly expanding non-personnel component of higher education costs. This catches higher education in a most unfortunate bind between needing to meet uncontrollable costs and needing to balance the budget. This balance has been achieved by holding down faculty salaries and jeopardizing the institution's ability to maintain the high quality of teaching and research that has been attained since World War II.

Controlling rising utility costs have also made it imperative that scarce resources be spent on energy-saving renovations and more energy-efficient buidlings. This diverts funds from other capital projects in higher education, just as it does in the business sector. (See Exhibit 7.)



CHRONICLE CHART BY PETER H. STAFFORD SOURCE: D. KENT HALSTEAD

Since 1971, the Higher-Education Price Index has increased 85 per cent, while consumer prices rose 95 per cent and faculty salaries rose 59 per cent.

FACT–FILE

Price Increases Paid by Colleges and Universities

Index: 1967 = 100	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80
Personnel compensation								
Professional salaries	138.4	145.4	153.6	161.6	169.2	177.9	188.7	202.1
Faculty	137.4	144.4	152.3	161.1	168.7	177.6	187.9	201.3
Administration and institutional services	143.3†	150.8	160.7†	163.8	171.4†	179.5	192.0	206.5
Library	142.2†	149.4	157.1†	165.0	171.1†	177.7	192.0	206.8
Non-professional salaries, wages	144.3	153.4	165.7	179.1	191.5	206.5	222.8	243.2
Crafts	146.6	157.9	172.1†	186.2†	200.5	216.3	234.7	253.9
Clerical	140.6	149.6	164.0	176.0	187.6	201.7	216.6	237.4
Operators and laborers	147.2	157.7	171.9†	186.0†	199.8	214.6	231.6	255.0
Fringe benefits	197.7	222.0	241.0	266.7	295.0	324.3	367.1	409.4
Total personnel compensation	**146.0**	**155.3**	**165.5**	**176.4**	**187.1**	**199.2**	**214.8**	**232.4**
Contracted services, supplies, and equipment								
Services	131.9	138.1	150.2	157.4	166.7	176.1	188.8	201.8
Data processing	116.4	119.0	124.2	131.5	134.8	138.6	144.3	153.4
Communication	120.8	126.1	132.2	140.5	148.0	149.9	155.3	155.8
Transportation	146.3	148.2	153.3	170.8	181.2	188.5	193.8	224.8
Printing and duplicating	132.1	140.1	159.9	163.7	174.6	187.2	202.8	224.6
Supplies and materials	116.3	131.6	164.2	171.8	180.6	188.3	202.7	239.3
Equipment	123.1	130.6	154.1	163.2	171.5	183.3	197.7	215.9
Books and periodicals	177.0	195.3	219.5	251.8	267.7	286.4	316.2	363.9
Hardcover books	173.3	179.8	207.6	238.6	253.5	265.7	296.2	336.0
U. S. periodicals	177.8	217.7	238.0	268.2	288.2	310.9	345.2	394.2
Utilities	129.0	158.3	202.9	219.1	258.1	292.5	320.8	409.0
Total contracted services, supplies, and equipment	**131.5**	**144.5**	**168.8**	**186.2**	**194.8**	**209.3**	**225.9**	**260.9**
Higher-Education Price Index	**143.0**	**153.1**	**168.2**	**177.2**	**188.7**	**201.3**	**216.9**	**238.3**

† Estimated.

SOURCE: D. KENT HALSTEAD, NATIONAL INSTITUTE FOR EDUCATION

Source: Reprinted from The Chronicle of Higher Education September 15, 1980, p.15.

VI. Erosion of the Capital Base of Higher Education

The colleges and universities are serving more students--though the rate of growth of enrollments has slowed -- enrollments in 1980-81 are at a record 12 million, up almost 15 percent in the last five years. And the institutions in large measure are maintaining the quality of their academic programs.1/ But in the face of financial stringency driven by inflation, they are achieving these educational goals and balancing their current operating budgets by eroding their capital base. The institutions are being forced to consume capital resources provided by earlier generations without replacing them, and borrowing against the future. The erosion extends to all components of the capital base: the human/intellectual capital, the physical capital, and the financial capital.

1/ W. John Minter and Howard R. Bowen in their extensive studies of private colleges found:

> "...The great majority of institutions, though facing financial stringency, are maintaining their integrity and are neither retrenching nor experiencing significant deterioration." (See Exhibits 8 and 9.)

Their analogous studies of public colleges resulted in similar conclusions. The specific references are:

Independent Higher Education - 1980, National Institute of Independent Colleges and Universities, Washington, D.C., 1980, p.45; and

Preserving America's Investment in Human Capital, A Study of Public Higher Education, 1980, American Association of State Colleges and Universities, Washington, D.C. 1980, pp. 42-43.

Exhibit 8

AN EVALUATION OF ACADEMIC QUALITY

Public Institutions

CHANGES IN THE GENERAL CONTENT AND QUALITY OF EDUCATIONAL PROGRAMS, 1978-79 TO 1979-80, AS MEASURED BY "TREND CONSENSUS"[1] OF REPORTING ADMINISTRATORS, FACULTY, AND STUDENTS[2]

	Research and Doctorate-Granting Universities	Comprehensive Universities and Colleges	Two-Year Colleges	All Types of Institutions Combined
Overall Quality of Learning Environment				
Chief academic officer	0%	+62%	+32%	+38%
Chief student personnel officer	+20	+21	+32	+28
Senior faculty member	+15	+36	+22	+25
Editor of student newspaper	-38	-10	+43	+23
President of student body[3]	+ 8	+33	+19	+22
General Quality of Faculty Performance				
Chief academic officer	+36	+23	+41	+36
Senior faculty member	+ 8	+27	+38	+33
Rigor of Academic Standards				
Chief academic officer	+43	+38	+32	+35
Chief student personnel officer	+17	+ 4	+ 9	+ 9
Senior faculty member	0	0	+37	+24
Editor of student newspaper	-46	-19	0	- 9
President of student body[3]	0	+23	0	+ 6
General Academic Achievement of Students				
Chief academic officer	+36	+ 9	+ 6	+ 9
Chief student personnel officer	+47	0	+15	+14
Senior faculty member	+31	0	- 6	- 2
Editor of student newspaper	- 8	-15	+ 4	- 2
President of student body[3]	+38	+ 4	+29	+23

[1] Percentage of respondents reporting an increase minus percentage reporting a decrease. See methodological comment, p. 34.

[2] Based on responses from 69 chief academic officers, 73 chief student personnel officers, 67 senior faculty members, 61 student newspaper editors, 65 student body presidents, representing 93 institutions.

[3] Or other comparable student leader.

Reprinted from W. John Minter and Howard R. Bowen, Preserving America's Investment in Human Capital, A Study of Public Higher Education, 1980, American Association of State Colleges and Universities, Washington, D. C. 1980, p. 52.

Private Institutions

CHANGES IN THE CONTENT AND QUALITY OF EDUCATIONAL PROGRAMS, 1978-79 TO 1979-80, AS MEASURED BY "TREND CONSENSUS"[1] BY REPORTING ADMINISTRATORS, FACULTY, AND STUDENTS[2]

	Research and Doctorate-Granting Universities	Comprehensive Universities and Colleges	Liberal Arts Colleges I	Liberal Arts Colleges II	Two-Year Colleges	Five Types of Institutions Combined
Overall quality of learning environment						
Chief Academic Officers	50%	50%	12%	64%	47%	51%
Chief Student Personnel Officers	36	56	47	56	43	51
Senior Faculty Members	36	27	27	27	23	27
Editor of Student Newspaper	-40	- 8	0	41	29	22
President of Student Body[3]	45	23	44	28	33	31
General quality of faculty performance						
Chief Academic Officers	40	38	18	45	46	41
Senior Faculty Members	27	37	6	36	46	34
Rigor of academic standards						
Chief Academic Officers	30	56	-12	59	40	44
Chief Student Personnel Officers	27	27	24	44	21	33
Senior Faculty Members	36	21	14	9	7	12
Editor of Student Newspaper	20	- 8	- 7	11	0	5
President of Student Body	56	23	22	23	9	21
General academic achievement of students						
Chief Academic Officers	20	39	- 6	46	14	30
Chief Student Personnel Officers	9	17	18	28	36	26
Senior Faculty Members	27	5	20	- 9	- 8	- 2
Editor of Student Newspaper	0	0	0	12	43	15
President of Student Body	11	18	22	5	16	12

[1] Percentage of institutions reporting an increase minus percentage reporting a decrease.

[2] Based on responses from 59 editors, 77 student body presidents, 80 faculty members, 82 chief academic officers, and 83 student personnel officers from 135 institutions.

[3] Or other comparable student leader.

Reprinted from W. John Minter and Howard R. Bowen, Independent Higher Education - 1980, National Institute of Independent Colleges and Universities, Washington, D.C. 1980, p. 45.

Exhibit 9

AN EVALUATION OF ACADEMIC QUALITY - DETAIL

Public Institutions

CHANGES IN METHODS AND QUALITY OF INSTRUCTION, 1978-79 TO 1979-80, AS INDEPENDENTLY REPORTED BY ADMINISTRATORS, FACULTY, AND STUDENTS, ALL TYPES OF INSTITUTIONS COMBINED[1]

	Percentage of Reporting Institutions				
	Increase	No Change	Decrease	Don't Know	Trend Consensus[2]
Amount of Laboratory and Studio Instruction					
Chief academic officer	28%	59%	4%	9%	+24%
Chief student personnel officer	31	60	1	8	+30
Senior faculty member	20	70	3	7	+17
Editor of student newspaper	31	51	2	16	+29
President of student body[3]	26	53	6	15	+20
Rigor in Assessing Student Performance					
Chief academic officer	43	41	10	6	+33
Chief student personnel officer	25	53	16	6	+ 9
Senior faculty member	27	61	10	2	+17
Editor of student newspaper	31	34	22	13	+ 9
President of student body[3]	17	52	11	20	+ 6
Innovative Teaching Methods					
Chief academic officer	68	26	3	3	+65
Chief student personnel officer	52	35	8	5	+44
Senior faculty member	65	31	1	3	+64
Editor of student newspaper	54	33	7	6	+47
President of student body[3]	50	38	6	6	+44
Traditional Independent Study					
Chief academic officer	20	59	10	11	+10
Chief student personnel officer	14	74	3	9	+11
Senior faculty member	17	58	5	20	+12
Editor of student newspaper	28	49	13	10	+15
President of student body[3]	22	44	19	15	+ 3
Non-traditional Independent Study					
Chief academic officer	36	56	3	5	+33
Chief student personnel officer	31	57	6	6	+25
Senior faculty member	36	48	7	9	+29
Editor of student newspaper	34	39	8	19	+26
President of student body[3]	34	33	10	23	+24
Experiential Learning					
Chief academic officer	47	41	2	10	+45
Chief student personnel officer	42	51	2	5	+40
Senior faculty member	49	41	3	7	+46
Editor of student newspaper	59	21	3	17	+56
President of student body[3]	50	30	4	16	+46
Average Class Size					
Chief academic officer	40%	47%	10%	3%	+30%
Chief student personnel officer	26	53	14	7	+12
Senior faculty member	40	49	8	3	+32
Editor of student newspaper	35	42	14	9	+21
President of student body[3]	48	27	17	8	+31
Rigor of Academic Standards					
Chief academic officer	42	46	7	5	+35
Chief student personnel officer	20	66	11	3	+ 9
Senior faculty member	39	41	15	5	+24
Editor of student newspaper	21	39	30	10	- 9
President of student body[3]	18	58	12	12	+ 6
Overall Quality of Learning Environment					
Chief academic officer	44	44	6	6	+38
Chief student personnel officer	31	60	3	6	+28
Senior faculty member	33	54	8	5	+25
Editor of student newspaper	42	33	19	6	+23
President of student body[3]	36	39	14	11	+22

[1] Based on responses from 69 chief academic officers, 73 chief student personnel officers, 67 senior faculty members, 61 student newspaper editors, 63 student body presidents, representing 93 institutions.

[2] Percentage of respondents reporting an increase minus percentage reporting a decrease. See methodological comment, p. 34.

[3] Or other comparable student leader.

Reprinted from W. John Minter and Howard R. Bowen, Preserving America's Investment in Human Capital, A Study of Public Higher Education, 1980, American Association of State Colleges and Universities, Washington, D. C. 1980, pp. 42-43.

Human Capital.

The faculty and staff are higher education's most valuable assets, as is true in any high knowledge industry. Personnel compensation absorbs fifty to seventy percent of current operating budgets. Personnel compensation is both the major cost component and the one which institutions can control more easily than the costs of contracted services, supplies, equipment, and utilities over which they have much less control.

Because revenues have not increased as fast as the costs that the institutions cannot control, colleges have held down increases in staff compensation to such an extent that faculty have lost close to one-sixth of the purchasing power of their base salaries since 1972 [1/] In large measure to make up for this loss of real income, close to four-fifths of the faculty have sought extra work from the institutions or from outside employers to earn additional income [2/] -- with undetermined consequences for their primary academic commitment. (See Exhibit 10.)

As additional cost-saving measures, state legislatures and the colleges themselves have imposed sharp reductions on many campuses in staff support services and restrictions on funds for library acquisitions, conference participation, and travel. These measures are likely to decrease the productivity of the faculty and limit their opportunities for intellectual cross-fertilization, ultimately with adverse affects on the growth of the knowledge base. (See Exhibit 11.)

[1/] American Association of University Professors, Academe: "An Era of Continuing Decline: Annual Report on the Economic Status of the Profession: 1978-79," American Association of University Professors, September 1979.

[2/] Howard Bowen, Faculty Compensation. TIAA-CREF, New York, 1980.

Levels and indexes of faculty salaries in current and constant (1967–68) prices and the Consumer Price Index: 1967–68 to 1978–79

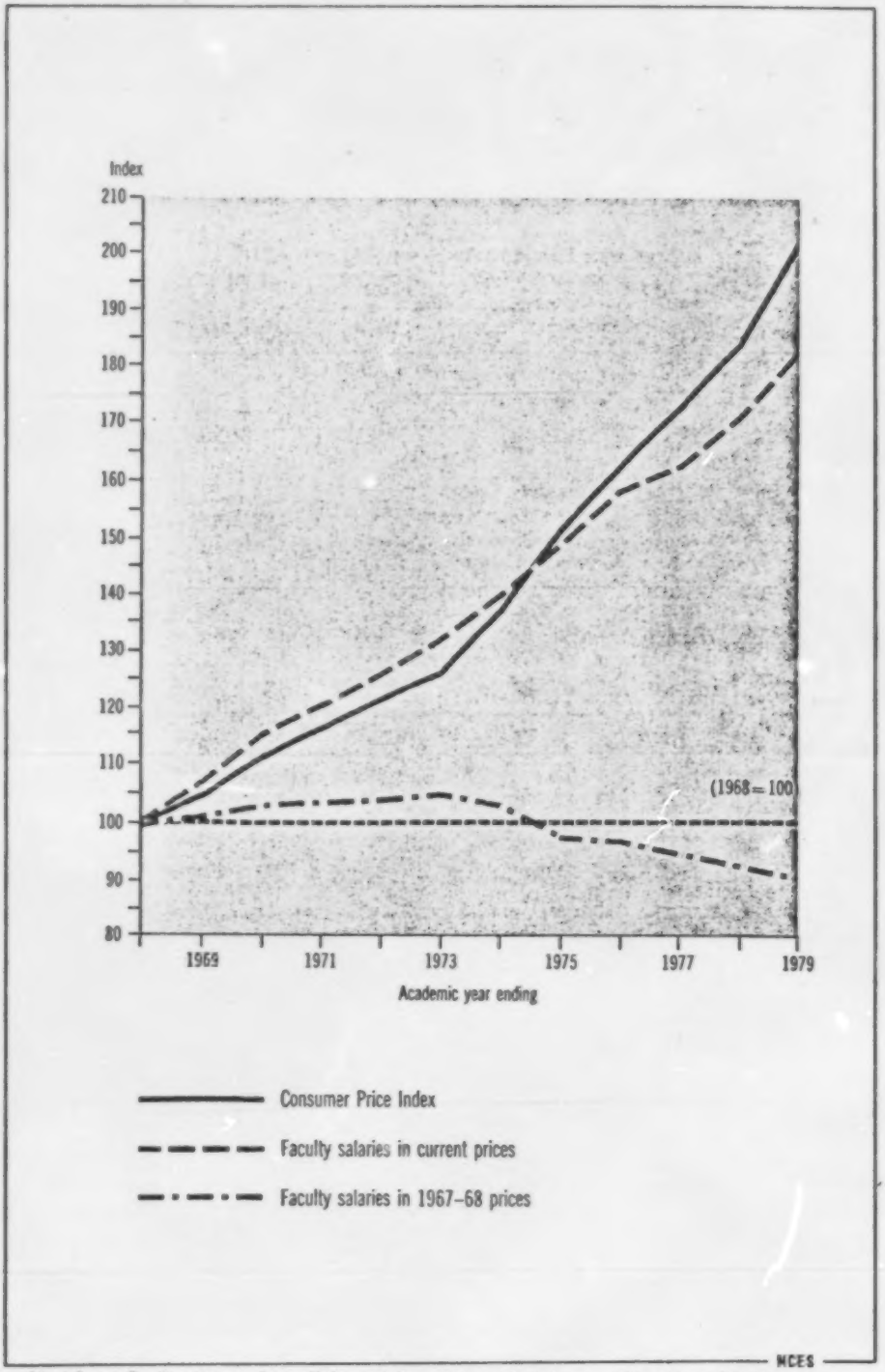
Year	Salaries in current prices		Salaries in 1967–68 prices		Consumer Price Index
	Average salary	Index	Average salary	Index	
1967–68	$11,033	100.0	$11,033	100.0	100.0
1968–69	11,760	106.6	11,221	101.6	104.8
1969–70	12,637	114.5	11,293	102.4	111.1
1970–71	13,284	120.4	11,373	103.1	116.8
1971–72	13,823	125.3	11,424	103.5	121.0
1972–73	14,552	131.9	11,568	104.8	125.9
1973–74	15,459	140.1	11,276	102.2	137.1
1974–75	16,403	148.7	10,770	97.6	152.3
1975–76	17,450	158.2	10,699	97.0	163.1
1976–77	17,930	162.5	10,394	94.2	172.5
1977–78	18,897	171.3	10,265	93.0	184.1
1978–79	20,120	182.4	9,990	90.5	201.4

SOURCE: American Association of University Professors, *Academe: Bulletin of the AAUP*, "An Era of Continuing Decline: Annual Report on the Economic Status of the Profession, 1978–79", September 1979.

Reprinted from the National Center for Education Statistics, The Condition of Education, 1980 Edition, U. S. Department of Education, GPO, pp. 124.

Chart 3.12
Faculty Salary Indexes and the Consumer Price Index

Until 1973–74, faculty salaries kept pace with inflation, but then began to decline. In terms of 1967–68 prices, average salaries in 1978–79 were almost 10 percent less than in 1967–68.



Reprinted from the National Center for Education Statistics, The Condition of Education, 1980 Edition, U. S. Department of Education, GPO, pp. 125.

26A

Exhibit 11

REDUCTIONS IN ACADEMIC SUPPORT EXPENDITURES

Public Institutions

CHANGES IN SUPPORTING SERVICES FOR FACULTY, 1978-79 TO 1979-80, AS REPORTED BY SENIOR FACULTY MEMBERS

	Percentage of Reporting Institutions				
	Increase	No Change	Decrease	Don't Know	Trend Consensus[1]
Secretarial and Related Assistance					
Research and Doctorate-Granting Universities	8%	54%	38%	0%	-31%
Comprehensive Universities and Colleges	5	50	45	0	-41
Two-Year Colleges	19	58	23	0	- 3
All Types of Institutions Combined	14	56	30	0	-15
Research Support					
Research and Doctorate-Granting Universities	31	31	38	0	- 8
Comprehensive Universities and Colleges	50	32	18	0	32
Two-Year Colleges	19	44	7	30	11
All Types of Institutions Combined	28	40	13	19	15
Professional Travel					
Research and Doctorate-Granting Universities	15	31	54	0	-38
Comprehensive Universities and Colleges	9	50	41	0	-32
Two-Year Colleges	13	39	48	0	-35
All Types of Institutions Combined	12	41	47	0	-35

[1]Percentage of institutions reporting an increase minus percentage reporting a decrease. See methodological comment on page 33.

Reprinted from W. John Minter and Howard R. Bowen, Preserving America's Investment in Human Capital, A Study of Public Higher Education, 1980, American Association of State Colleges and Universities, Washington, D. C. 1980, p. 29

Private Institutions

CHANGES IN SUPPORT SERVICES FOR FACULTY, 1978-79 TO 1979-80, AS REPORTED BY CHIEF ACADEMIC OFFICERS AND SENIOR FACULTY MEMBERS, FIVE TYPES OF INSTITUTIONS COMBINED[1]

	Percentage of Reporting Institutions				
	Increase	No Change	Decrease	Don't Know	Trend Consensus[2]
Secretarial and related assistance					
Chief Academic Officers	34	59	3	4	+31
Senior Faculty Members	21	71	7	0	+13
Research support					
Chief Academic Officers	31	62	2	5	+29
Senior Faculty Members	19	71	8	2	+11
Professional travel					
Chief Academic Officers	38	42	18	2	+20
Senior Faculty Members	24	59	15	2	+ 9

[1]Based on responses from 80 of 125 institutions.

[2]Percentage of institutions reporting an increase minus the percentage reporting a decrease.

Excerpted from W. John Minter and Howard R. Bowen, Independent Higher Education - 1980, National Institute of Independent Colleges and Universities, Washington, D.C. 1980, p. 45

Of immediate concern, particularly in the technical areas, where salaries of some recent graduates exceed those of the faculty, is the risk of being unable to attract the best students into teaching, and even of losing the best of the current faculty to other employment.

As other costs rise, a longer term concern is the erosion of the share of resources that educational institutions commit to teaching. At many institutions, less than half of their operating budget is available to spend for teaching.

Physical Capital.

Educational Facilities. Higher education needs better information about the amount and the condition of the educational facilities of the colleges and universities and whether any new capital is needed in an era of potential enrollment decline. It is exceedingly difficult to make an accurate assessment, however, because the last survey of physical facilities in higher education was conducted by the National Center for Educational Statistics (NCES) in 1975. Discussions are being held about conducting a new survey in 1982, focusing on capital requirements.

Capacity Utilization in Higher Education. Higher education does not yet have a definition of its "capacity", let alone a measure of its rate of utilization. There is no statistical equivalent for higher education to the information on utilization rates available to industry in making investment decisions, though the conceptual problems in developing capacity measures are not necessarily much more difficult for higher education than for industry. It should be noted that at the campus level, capacity in terms of teaching load, and classroom and dormitory space is well understood.

While no good measures of aggregate capacity or utilization rates exist for higher education, we have attempted to use crude proxies developed from the surveys of panels of public and private institutions conducted annually by Howard Bowen and John Minter. 1/

1/ W. John Minter and Howard R. Bowen, Independent Higher Education - 1980, National Institute of Independent Colleges and Universities, Washington, D.C. 1980.

W. John Minter and Howard R. Bowen, Preserving America's Investment in Human Capital, A study of Public Higher Education, 1980, American Association of State Colleges and Universities, Washington, D.C. 1980, p.18.

They asked institutions first whether they would have preferred to enroll additional students (full-time-equivalent undergraduates). Then those reporting a preference for more students were asked what percentage increase in enrollment could have been accommodated without significant additions to faculty, housing, or classrooms, using the same academic calendar. Inverting these percentages arithmetically (i.e. if they could handle 3 percent more enrollment, then they are at 97 percent capacity) produces a calculation which roughly approximates a capacity utilization rate, even though the measure is not standardized across institutions. (See Exhibit 12.)

Based on these data, the estimate of the capacity utilization rate derived for the private sector in higher education is 94 percent and for the public sector is 92 percent.

Acknowledging that these are rough estimates, the data seem to indicate that the rate of capacity utilization in higher education is comparatively high--appreciably higher than current industrial standards.

Deferred Maintenance.

With rapid growth in the number of institutions and expanded capacity put in place in the 1950s and 1960s, a substantial proportion of higher education facilities are twenty to thirty years old and in need of replacement or renovation. Many older institutions have aging facilities build over fifty to one hundred years ago. Institutions attempt to have their facilities in established cylces of regular maintenance and renewal, but faced with financial exigency, they have stretched these cycles and deferred maintenance for many years. Frequently, maintenance has been deferred to the point that it leads to capital requirements for replacement, as when replacing a roof that a few years before could have been repaired.

A survey of deferred maintenance of higher education institutions was conducted in 1977 by the Association of Governing Boards and the National Association of College and University Business Offices. They found extensive amounts of undermaintenance of facilities. 1/ It is not likely that conditions have improved much since that time given the continuing financial stringency on most campuses and the passage of time.

1/ Association of Governing Boards, AGB Reports, Washington, D.C. November/December 1977, pp. 12-16.

Exhibit 12

College and University Capacity Utilization

Estimates for 1979-80

	Public	Private
Research and Doctoral Universities	97	97
Comprehensive Colleges	94	97
Liberal Arts I Colleges	NA	97
Liberal Arts II Colleges	NA	87
Two-Year Colleges	80	86
Total	92	94

Source: American Council on Education, Division of Policy Analysis and Research, based on Minter-Bowen studies.
Independent Higher Education - 1980, National Institute of Independent Colleges and Universities, Washington, D.C. 1980.
Preserving America's Investment in Human Capital, A Study of Public Higher Education, 1980, American Association of State Colleges and Universities, Washington, D.C. 1980, p. 18.

Equipment.

Investment in equipment is often very large for higher education institutions, particularly for the research universities and the technically-based two-year colleges. Some estimates suggest that for each $10 million in plant, an institution may have $3 million in equipment. If the $10 million plant has a 40-year life and the $3 million equipment has a five-year life, the annual capital consumption would be more than twice as great for the equipment as for the plant: $600,000 for equipment as compared with $250,000 for plant.

Equipment used in teaching and research by higher education institutions has a very high rate of technological obsolescence. A recent study sponsored by the National Science Foundation and carried out by the Association of American Universities estimated that the median age of equipment in research universities was twice that of the equipment in industry. (See Exhibit 13.) The authors concluded that "the quality of research instrumentation in major university research laboratories has seriously eroded." 1/

If colleges do not have new equipment for teaching, students will learn on obsolete equipment and enter the job market with antiquated skills. It is also sometimes the case that faculty are attracted away from campus research to industry by promises of working with newer and better equipment.

The National Science Foundation (NSF) collects detailed information on capital expenditures for science activities by source of funds and by field of research. The NSF data available for 1968 to 1977 indicate that the 1968 level of $1.1 billion was not matched in any subsequent year -- even in current dollars, and in dollars of constant purchasing power the decline was substantially greater. Over the period from 1968 to 1977 the share funded by the federal government declined steadily from $340 million in 1968 to $195 in 1977, dropping from about one-third to about one-fifth of the total. Capital expenditures from other sources fluctuated over the decade earlier in current dollars, but again, substantially lower in dollars of constant purchasing power. By far the largest expenditures for scientific activities at colleges and universities are in the life sciences, which accounted in 1977 for $645 out of the $960 total.

One rough indication of unmet needs of the institutions for equipment can be derived from requests for funding from the NSF

1/ Association of American Universities, The Scientific Instrumentation Needs of Research Universities, A Report to the National Science Foundation, Washington, D.C., June 1980, Introduction and p. 13.

Exhibit 13

OBSOLETE EQUIPMENT

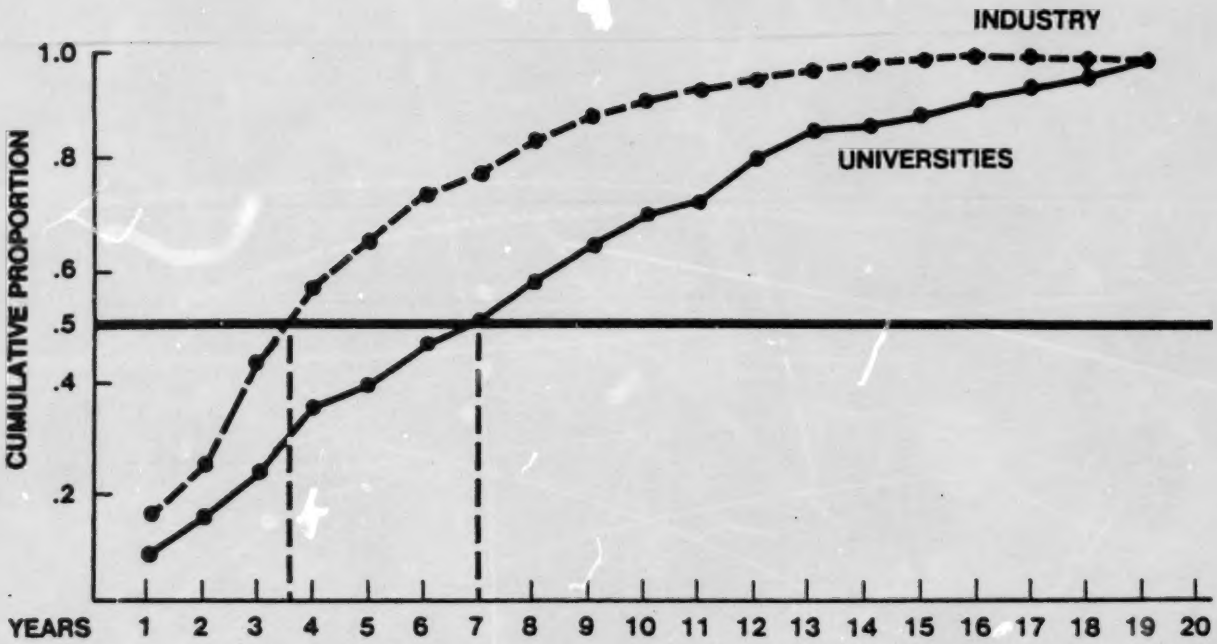


FIGURE 3. *Age of Instrumentation in Universities Twice That In Industry (Proportion of Instrumentation Inventory Purchased Less Than n Years Ago; Data Derived from Table A).*

Reprinted from Scientific Instrumentation Needs of Research Universities, A Report to the National Science Foundation by the Association of American Universities, Washington, D.C., June 1980, p. 13.

Instructional Scientific Equipment Program. The annual requests for funding have amounted in recent years to about $18 million but only about 20 percent of the requests can be funded by the program each year. There is a distinct trend toward higher average dollar requests over recent years reflecting both inflation and greater sophistication of the equipment. In 1980, Congress voted a major increase in appropriations for the program but the budget cuts of the Reagan Administration may eliminate the increase.

If adequate funding is not available to purchase needed scientific equipment, research performed by the colleges and universities will be impeded, and students will graduate with obsolete skills and will have to be retrained by industry on their first job. The adequacy of the scientific equipment available for teaching and research at the colleges and universities is a concern shared by both higher education and industry.

A more comprehensive study of research facility needs was undertaken in the Spring of 1981 by the American Association of Universities based on detailed information provided by five separate scientific departments at sixteen research universities. On the basis of patterns of needs that they found for special research equipment, major repair and renovation, facility modernization, and new construction they estimated that the top one hundred research universities spent $856 million during the last three years to upgrade their research facilities. During fiscal year 1980-81 alone they estimate that they will spend over $900,000 and they anticipate that their needs for capital expenditures for research facilities over the next three years will exceed $4 billion. 1/

Financial Capital.

Comprehensive studies of the financial condition of American colleges and universities indicate that more and more institutions have fewer and fewer financial reserves. 2/ Increasingly, charitable contributions have to be spent to meet current operating requirements

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1/ American Association of Universities, forthcoming publication on Research Facilities Needs of Leading Universities, based on data obtained from an AAU survey and analysed by the Division of Policy Analysis and Research of the American Council on Education, Washington, D.C., Spring, 1981.

2/ Nathan Dickmeyer, The Financial Condition of American Colleges and Universities, American Council on Education Division of Policy Analysis and Research, forthcoming publication, Summer, 1981.

and are not available to rebuild endowments eroded by inflation and poor performance in the equity and bond markets. Many institutions have been forced to draw down on their reserve funds, an even more serious encroachment into the financial base of the institutions. (See Exhibit 14.)

Institutions have been unable to meet the objective of restoring their financial base to the level which will provide a constant stream of real income per student to support the historic share of cost covered by endowment income, much less to provide an increasing margin for quality improvement.

Endowments. College and university endowments now total close to $20 billion. The market value of educational endowments have grown with the economy and inflation, doubling and tripling from the late 1950s to the early 1970s, as reported in the statistical bulletins of the Securities and Exchange Commission. But almost one-third of the market value of $16.2 billion reached in 1972 was lost when the value of endowments dropped to $11.4 billion with the decline of the stock market in 1973-1974. Recovery of the 1972 level of assets with appreciation and additions of new funds took most of the rest of the decade of the 1970s.

Endowments, though very significant to many private colleges, are heavily concentrated among a few institutions. Harvard, with an endowment of $3 billion by itself, accounts for a large share of all the endowment funds held. Approximately 500 institutions have endowments of $5 million or more. But the endowment of the median private institution is zero -- meaning that more than half of the private institutions do not have any endowment at all.

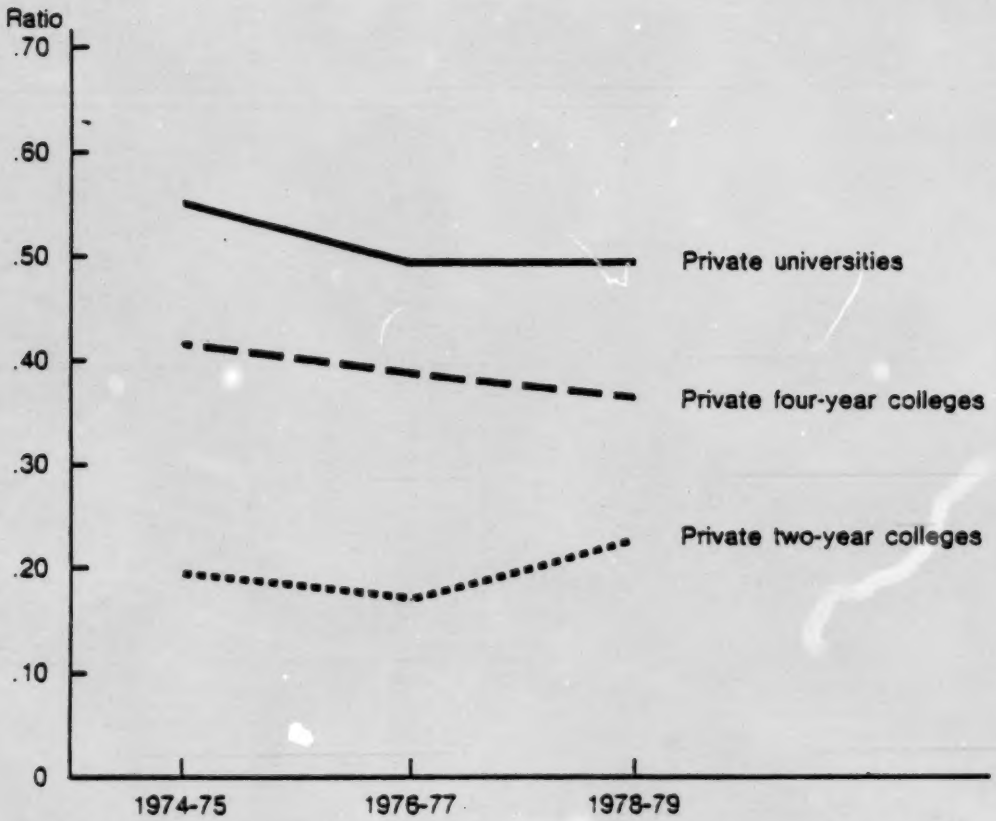
The market value of educational endowments in real dollars per student shows a precipitous decline from the levels of the mid-1960's. Endowment per student in real dollars has declined from $8,466 in 1963 to $3,885 in 1978 -- driven down both by inflation (the Higher Education Price Index has more than doubled over the period) and by growth of enrollments.

Though most of the endowments are held by private institutions, as government support for public institutions has lagged behind inflation, more and more public institutions are establishing their own private foundations as vehicles for receiving private contributions.

The endowments of both private and public institutions are usually managed by an investment committee of the board of trustees. They have typically been invested very conservatively and with attention to the current income requirements of the institutions.

Exhibit 14

Fig. 2. Trends in the Ratio of Available Fund Balances to Operating Expenses*



* $\frac{\text{current fund balance + quasi-endowment fund balance}}{\text{educational and general expenditures + mandatory transfers}}$

Institutional Category	Number	Institutions with Ratios Increasing > 5% Each Period	Institutions With Ratios Decreasing > 5% Each Period
Private universities	37	0	14
Private four-year colleges	914	155	210
Private two-year colleges	243	91	30

Reprinted from French Gomberg and Frank J. Atelsek, "Trends in Financial Indicators of Colleges and Universities", "Higher Education Panel Report, ACE Number 49, April 1981, p.7.

Because of the traditional conservatism of the management of education endowments, efforts were made in the beginning of the 1970s to introduce the total return concept for use by the college and university endowment managers. Unfortunately, the concept was introduced and applied in the early 1970s, just before the collapse of the stock market in 1973-1974 and the onslaught of virulent inflation. Total return, which takes into account dividends and appreciation, is a valid measure of comparative investment performance but is not, as such, a criterion for determining pay-out rates -- which have to take inflation expectations into account as well.

In a period of rapid inflation, what had been a conservative investment policy turned out to result in significant erosion of the endowment, because funds should not have been paid out for current operations, but re-invested to assure the ability of the endowment to generate the same stream of real income in the future.

Today, those solicited by the colleges and universities for financial support are increasingly interested in how well the institutions are managing the funds that they already have, as measured by their performance in terms of rate of return. In recent years, great attention has been paid to improving the investment performance of college endowments through better management. To make professional management available, a Common Fund for pooled equity investment was created in 1971, a short term cash management fund and a bond fund were added in subsequent years. The Common Fund manages part, or all, of the endowment funds of a large number of the smaller institutions.

The president of the Common Fund, George Keane, has observed that if the investment performance of the approximately $20 billion in endowments of American colleges and universities were improved by one percent, the funds flowing to the support of the institutions would increase by $200 million per year.

VII. Needs for Capital

Needs for Capital if Enrollment Declines

Over the next decade and a half, the college-age population is projected to decline by close to 25 percent. (See Exhibits 15 and 16.) If that population decline leads in turn to enrollment decline, retrenchment, it is argued, could result in greatly reduced capital needs in higher education.

The projected decline of 4.3 million in the college-age population is, however, accompanied by an increase of 22.9 million in the population age 25 and over. The most significant determinant of additional demand for education is the previous level of educational achievement. As more people have some college, more are going to demand additional life-long learning opportunities. And new educational markets may have the potential to offset substantially the projected deadlines in enrollment of the college-age population group. [1/] Recent data indicate that not only is enrollment up in 1980-1981 but applications are up for the coming academic year over the preceding year, despite a decline in the size of the college-age group. Thus, the demographic and enrollment trends may -- or may not -- lead to reduced capital needs in higher education. And serving different types of students or serving them in different locations could require new facilities, both of which require capital investment, or could result in needs to remodel old facilities.

But even with the worst-case scenario of substantial decline in enrollment, the demographics indicate that the educational capacity would be needed again in another 15 to 20 years as the college-age population trends upward again. While mobility into and out of higher education should be encouraged in higher education as in all industries to promote economic efficiency, there are substantial individual and social costs that would accompany shutting down and re-opening institutions of higher education. This is particularly true in those many communities where the college is the largest employer.

Replacement and Modernization of Plants

Apart from the demographic trends, underinvestment in the capital base of higher education over the last decade or more has created current conditions in which capital would be needed for replacement and renovation even if the facilities were to serve a smaller number of students. For instance, some of the nation's most prestigious universities are still making use of "temporary" post-World War II buildings. Most colleges do not have the full complement of facilities envisioned in their master plans -- despite having stable maximum enrollment levels. The requirements to make facilities energy

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[1/] Carol Frances, College Enrollment Trends: Testing the Conventional Wisdom Against the Facts, American Council on Education, 1980.

Exhibit 15

College-Age Population Trends

1950–2000

Year	18 Year Olds	18–21 Year Olds	18–24 Year Olds
1950	2.164	8.946	16.075
1951	2.085	8.741	15.781
1952	2.058	8.514	15.472
1953	2.160	8.416	15.257
1954	2.135	8.384	15.103
1955	2.142	8.443	14.968
1956	2.244	8.636	14.980
1957	2.274	8.746	15.094
1958	2.307	8.909	15.308
1959	2.431	9.190	15.404
1960	2.613	9.556	16.128
1961	2.976	10.290	17.004
1962	2.816	10.813	17.688
1963	2.786	11.171	18.268
1964	2.763	11.230	18.783
1965	3.804	12.203	20.293
1966	3.536	12.944	21.376
1967	3.545	13.738	22.327
1968	3.539	14.528	22.883
1969	3.676	14.425	23.723
1970	3.780	14.707	24.687
1971	3.875	15.019	25.779
1972	3.970	15.438	25.913
1973	4.048	15.796	26.397
1974	4.093	16.109	26.916
1975	4.243	16.483	27.605
1976	4.251	16.767	28.163
1977	4.244	16.970	28.624
1978	4.229	17.106	28.980
1979	4.292	17.156	29.299
1980	4.211	17.117	29.462
1981	4.145	17.018	29.512
1982	4.087	16.874	29.357
1983	3.917	16.499	29.022
1984	3.703	15.988	28.480
1985	3.604	15.442	27.853
1986	3.521	14.873	27.084
1987	3.567	14.520	26.446
1988	3.653	14.470	25.967
1989	3.733	14.600	25.629
1990	3.426	14.506	25.148
1991	3.240	14.179	24.687
1992	3.168	13.685	24.240
1993	3.247	13.196	23.957
1994	3.199	12.971	23.594
Series I			
1995	3.515	13.248	23.475
1996	3.806	13.886	23.568
1997	4.071	14.719	24.224
1998	4.302	15.525	25.288
1999	4.506	16.821	26.620
2000	4.672	17.692	28.039
Series II			
1995	3.262	12.996	23.223
1996	3.359	13.184	22.864
1997	3.491	13.432	22.937
1998	3.652	13.888	23.350
1999	3.806	14.434	23.990
2000	3.911	14.990	24.653
Series III			
1995	3.115	12.848	23.075
1996	3.043	12.721	22.401
1997	3.027	12.500	22.006
1998	3.133	12.435	21.898
1999	3.301	12.621	22.335
2000	3.426	13.006	22.225

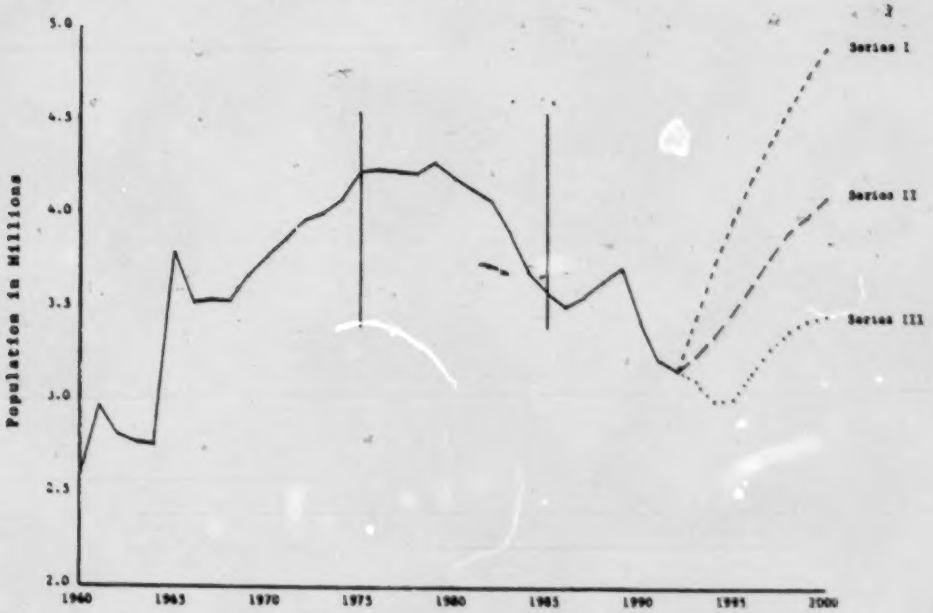
Source: U.S. Bureau of the Census, *Current Population Reports*, Series P-25, Number 311, pp. 4–23; No. 519, pp. 12–28; No. 704, pp. 33–68; No. 721, pp. .0–16; No. 8[illegible] Government Printing Office, Washington, D.C., pp. 5–9

Reprinted from: Carol Frances, College Enrollment Trends: Testing the Conventional Wisdom Against the Facts, Association Council for Policy Analysis and Research, 1980, p.10.

DECLINE IN COLLEGE-AGE POPULATION

Exhibit 16

ESTIMATES OF THE 18-YEAR-OLD POPULATION OF THE UNITED STATES: 1960 TO 2000[a]



ESTIMATES OF THE 18-YEAR-OLD POPULATION OF THE UNITED STATES: 1960 TO 2000[a]

Year	Population (000)		
1960	2,613		
1961	2,976		
1962	2,816		
1963	2,786		
1964	2,763		
1965	3,804		
1966	3,336		
1967	3,545		
1968	3,539		
1969	3,676		
1970	3,780		
1971	3,875		
1972	3,970		
1973	4,044		
1974	4,093		
1975	4,240		
1976	4,249		
1977	4,239		
1978	4,224		
1979	4,286		
1980	4,206		
1981	4,141		
1982	4,083		
1983	3,914		
1984	3,701		
1985	3,601		
1986	3,520		
1987	3,586		
1988	3,653		
1989	3,728		
1990	3,444		
1991	3,237		
1992	3,174		
	Series I	Series II	Series III
1993	3,449	3,252	3,118
1994	3,730	3,357	3,019
1995	3,998	3,495	3,033
1996	4,218	3,642	3,165
1997	4,416	3,786	3,294
1998	4,596	3,928	3,391
1999	4,758	4,340	3,443
2000	4,907	4,111	3,475

[a] As of July 1 of each year.

Note: Bureau of the Census Series I, II, and III are based on projections of the average number of lifetime births per woman as follows: Series I 2.7, Series II 2.1, and Series III 1.7.

Source: U.S. Bureau of the Census, Current Population Reports, Series P-25, Nos. 519 and 601.

Reprinted from Cathy Henderson, Changes in Enrollment by 1985, ACE. 1977, pp. 11-12.

efficient and to comply with government regulations create still additional needs of the colleges and universities for capital investment.

Quality and Condition of Educational Facilities

During the substantial growth phase in high education in the 1960's, many colleges developed master plans for their campuses, including physical plant layouts. The building of new facilities and renovation were ordered in priority and construction begun. As enrollment increases slowed in the 1970's, general perceptions about the need for capital improvements diminished. But with the exception of classrooms and dormitories, the need for most other structures are not predicated on enrollment. Original master plans called for a cultural arts center, or a faculty office building or replacing an old frame World War II "temporary" building with a new facility.

Renovations are needed not only for routine maintenance of structures, but to provide for shifting program priorities. Laboratories became out-moded, because newly developed equipment and research agendas keep advancing, not to mention safety and access standards. The rising cost of energy and utilities in the 1970's and into the future has prioritized capital improvements simply to avoid even higher operating costs in the future. Thus colleges are investing capital to help keep down the size of the bite that program funds will almost inevitably suffer in the future through increased energy prices.

Thus, regardless of enrollment levels, capital expenditures are needed to maintain current capital stock, keep up with advancing technologies and shifting societal conditions, and improve the educational quality and services.

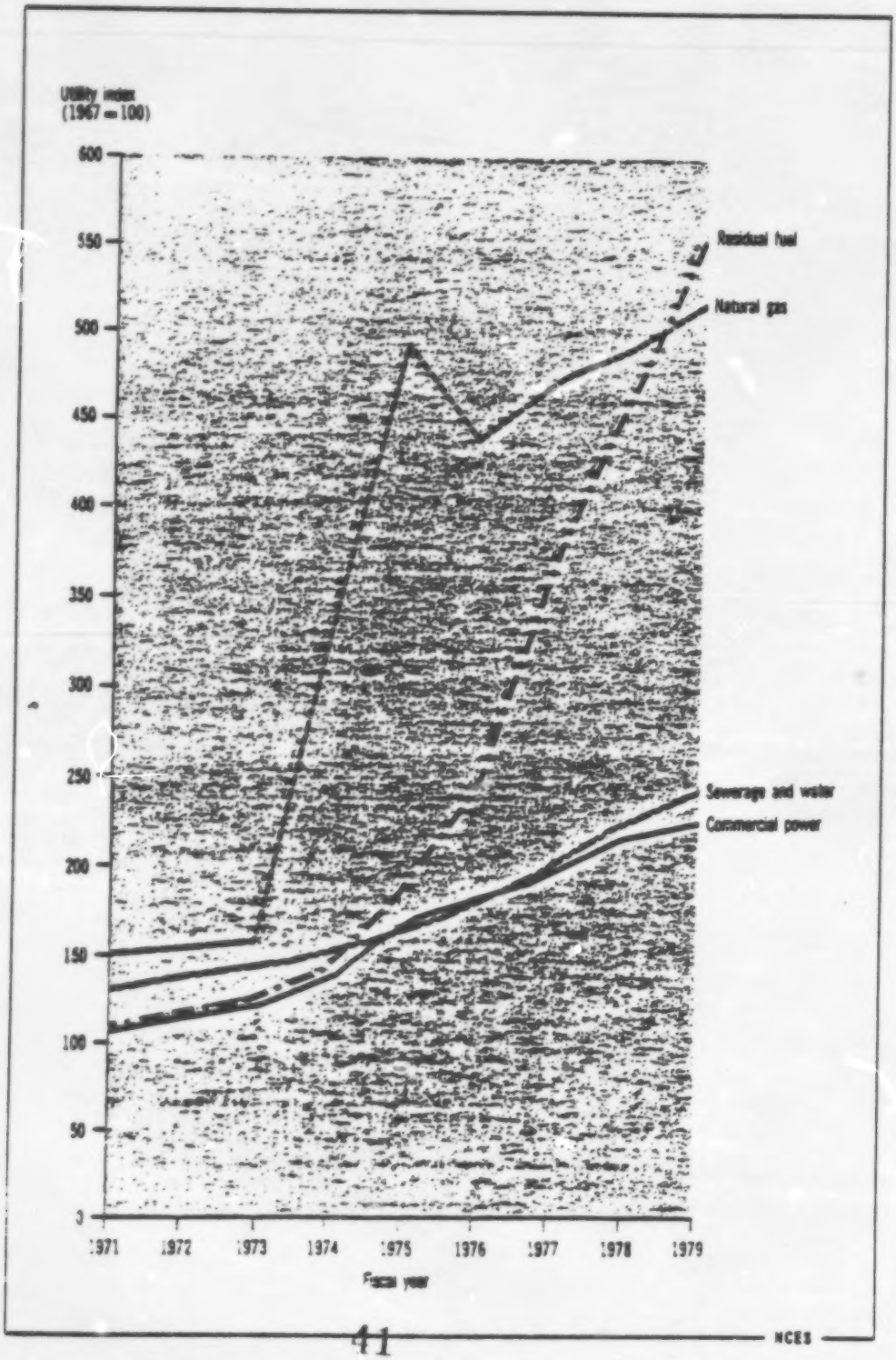
Energy Efficiency

The rising cost of energy -- which has quadrupled since the OPEC oil embargo in 1973 -- has greatly intensified financial pressure on higher educational institutions. (See Exhibit 17 and 7.) On many campuses the increased costs of energy were absorbed by cutting or deferring other costs of plant operation and maintenance--thus accelerating the deterioration of aging buildings. Residential colleges with extensive campus facilities to heat and cool, particu-

Exhibit 17

Chart 4.3
Changing Utility Prices

The cost of heating fuels paid by colleges and universities increased dramatically between 1971 and 1978.



Reprinted from the National Center for Education Statistics, The Condition of Education, 1980 Edition, U.S. Department of Education, GPO, p.153.

larly those located in areas with extreme weather conditions, have had to be especially resourceful. Nevertheless, energy price increases have been so steep that colleges report that they have reduced consumption substantially and still have seen their energy costs more than double over the last several years.

Decades of building educational facilities designed in an era of low U.S. energy costs cannot be corrected by merely reducing consumption. In many cases, modifications of buildings and heating and cooling systems are needed and these require capital investment. Few institutions have sufficient reserves to finance major capital improvements for greater energy efficiency out of their own funds.

However, the cost of energy is so substantial -- up to 5 percent or more of total operating budgets -- and the expectation of future cost increases is sufficiently strong, that colleges are actively looking for ways to raise the capital needed to make their campuses more energy efficient. Payback periods for recovering the cost of some of the needed investments from energy cost savings are as low as two years, or less. These returns are substantial incentives to finance the investments out of reserves or out of current operating budgets if the funds can be found. But other energy conserving investments to renovate and retrofit facilities and equipment have payback periods of five to ten years. Colleges historically have been reluctant to borrow funds in the private market for this type of investment for this length of time. Loans for energy conservation that significantly reduce future operating costs are potentially profitable to the lender and the borrower, however, and the private loan market has already indicated a willingness to lend funds to colleges for investment in energy conservation in return for a portion of the future energy cost savings. But because energy costs continue to rise, these "savings" are simply reductions in what would otherwise be spent -- and as energy costs go up, colleges have less money to pay faculty to teach. 1/

Compliance with Government Regulation

As are all business firms, higher education institutions are required to meet the federally mandated requirements of the social and environmental programs. Those programs that are likely to require capital outlays are occupational safety and health, environmental protection, hazardous waste disposal, access to facilities for the handicapped, and Title IX requirements as applied to athletic facilities. The costs of meeting these requirements can be substantial.

1/ Sharon L. Coldren, Director of the Energy Task Force Project to study energy management practices at colleges and universities. The Task Force report will be published in the Fall of 1981.

But since the pricing of higher education historically has not included the cost of capital, the government regulations add new cost burdens to the operating budgets. Changing the pricing structure of educational services to generate the funds to make these capital outlays through increased tuitions will impose enormous cost burdens directly on current students. Because the investments to bring facilities into compliance with regulations do not themselves generate a stream of income, lenders are not anxious to loan funds for these purposes. Even if the necessary funds could be borrowed, debt service on the loans at unprecedented interest rates is likely to put pressure on tuitions. Alternatively, other sources of capital are needed to finance these outlays resulting from the regulatory requirements.

The recent survey, cited earlier, by the American Association of Universities of research facilities needs estimated that one-third of the total expenditure over the last several years for major repairs and renovations of the research facilities were required because of government regulations. 1/ Because the pool of funds available for these expenses is limited and does not increase (except in isolated cases) with the government mandates, these funds have to be taken from budgets that would otherwise provide funds for teaching and research.

The deregulation thrust of the Reagan Administration may result in a roll back of some of the most costly, onerous and least effective requirements. Institutions not currently able to find the funds to make modifications needed to be in compliance are waiting to see if the rules are changing.

1/ Association of American Universities, Research Facilities Needs of Leading Universities, forthcoming publication, Spring 1981.

VIII. Sources of Funds for Capital Investment in Higher Education.

Historically, beginning with the establishment of Harvard University in 1636, the private sector of higher education in the United States was built primarily with grants of private funds. At first, much of the capital was provided by the churches and later much of it came from the major endowments of wealthy individuals.

The public sector was developed much later, stimulated by federal grants of public lands to the states with the Morrill Act of 1865 and state and local appropriations. In the late 1950's and 1960's the federal government provided grants and loans for educational facilities and dormitories and was a major factor in the expansion of the capital base of research universities through the awards of research and development grants and contracts.

Now, because of economic and social transformations, private institutions are suffering as some churches are no longer able to support their affiliated institutions to the same relative extent and major private grants of wealth to institutions are less frequent. States, anticipating declines in enrollments, have come to consider overbuilding and underutilization of capacity a likelier scenario for the coming decade than a shortage of capital funds in higher education, and are likely to provide less funding for the capital requirements of the public institutions.

Few of the funds for capital investment in higher education have ever been generated out of current operations, with funds for building or paying off loans generated out of resident fees. Dormitories are the exception. Capital investment has been funded from outside sources. If added capital is needed for renewal or expansion, increases in funds will have to be generated by revitalizing the earlier sources, or creating new sources. If they have to be generated out of current operations, this would mean that they would have to be incorporated in the costs recovered by student tuitions, which would drastically increase the costs of American higher education, with a concommitant impact on student educational opportunities.

Because private colleges have traditionally depended on outside resources to finance capital outlays for new structures, operating budgets have not included reserves for replacement costs. Depreciation is not typically found in the fund accounts of the nonprofit higher education institutions. Nonprofit accounting principles and practices are changing to incorporate improved accounting for the capital side of the higher education institutions. But can the institutions build up adequate reserves considering the historical backlog of underfunding of their capital requirements? Private philanthropy will continue to be critical to the financing of capital investment in higher education even as the colleges work to improve their internal ability to fund replacement.

Private Voluntary Support.

Voluntary support of the colleges and universities has historically been the major source of capital formation in private higher education. Public institutions are now successfully seeking voluntary support but primarily for academic programs and students, and not for capital investment.

Increasingly, in this era of inflation and financial exigency, voluntary support to the private institution has had to be used for current operations, instead of endowment building -- with the prospect that even less endowment income will be available for future operations.

Exhibit 18 shows the estimated levels of voluntary support per student for selected years since 1909 in current dollars and in dollars of 1967 purchasing power. The $138 per student in 1978-79 was only 55 percent of the peak level of support in constant dollars in 1965-66. While this kind of aggregate statistic does show the decreasing importance of voluntary support for all of higher education, it is not sensitive to the fact that the bulk of the voluntary support is in the private sector, whereas, the bulk of enrollment growth is in the public sector.

Capital Fund-Raising Campaigns.

A new ACE study documents that colleges and universities raised approximately $8.5 billion in fund drives inaugurated between 1974 and 1979. 1/

Private colleges have always depended on fund-raising campaigns to generate the capital needed for new buildings, equipment, and major program additions. Public colleges only rarely sought major private philanthropic funds before the 1970's. But about this time they began to use the same fund-raising techniques as the private institutions, in many cases competing with them for private funds where public funds did not meet their requirements.

It appears that those institutions that are already well endowed are also the institutions most successful in raising additional voluntary support. It is not unusual for a major university to seek several hundred million dollars in a capital campaign that lasts three to five years. The funds raised are devoted in most cases to buildings and endowments, the future income from which is used primarily to support the education of future students.

1/ Sharon L. Coldren, The Constant Quest: Raising Billions through Capital Campaigns, American Council on Education, September 1981.

Exhibit 18

Voluntary Support of Higher Education in Relation to Enrollment, Inflation, and Educational Costs

	Total Enrollment (thousands)	Consumer Price Index (1967 = 100)	Higher Education Price Index (1967 = 100)	Institutional Expenditures: Total (billions of current dollars)	Institutional Expenditures: Per Student (current dollars)	Institutional Expenditures: Per Student (1967 $ CPI)	Estimated Voluntary Support: Total (millions of current dollars)	Estimated Voluntary Support: Per Student (current dollars)	Estimated Voluntary Support: Per Student (1967 $ CPI)	As % of Institutional Expenditures
1909-10	355	26.9	n.a.	n.a.	n.a.	n.a.	23	65	242	n.a.
1949-50	2,659	71.7	n.a.	2.5	940	1,310	240	90	126	9.6
1965-66	5,967	95.9	95.0	15.2	2,547	2,656	1,440	241	251	9.5
1970-71	8,649	118.8	128.6	27.1	3,133	2,637	1,860	215	181	6.9
1974-75	10,322	154.5	166.2	38.9	3,769	2,439	2,160	209	135	5.6
1978-79	11,392	206.4	217.1	54.0	4,740	2,297	3,230	284	138	6.0
Average Annual Percentage Change:										
1909-10 to 1949-50	5.2	2.5	n.a.	n.a.	n.a.	n.a.	6.0	0.8	-1.6	
1949-50 to 1965-66	5.2	1.8	n.a.	11.9	6.4	4.5	11.9	6.4	4.4	
1965-66 to 1970-71	7.7	4.4	6.2	12.3	4.2	-0.1	5.3	-2.3	-6.3	
1970-71 to 1974-75	3.6	6.8	6.6	9.5	4.7	-1.9	3.8	-0.7	-7.1	
1974-75 to 1978-79	2.5	7.5	6.9	8.6	5.9	-1.5	10.6	8.0	0.6	

Reprinted From: The Council for Financial Aid to Education, Voluntary Support of Education, 1980, p.7.

Borrowing for Capital Needs.

Until the recent years of skyrocketing inflation, prudent institutions raised the full cost of a building before beginning construction. Now construction may be started before all the funds are in hand because inflation in construction costs might vastly increase the cost of a building if they waited until end of a five-year fund-raising campaign. Consequently, colleges are borrowing money more frequently than they did in the past and hold morgages on some facilities.

State Government Appropriations.

The system of higher education in the United States is not national but federal with the basic responsibility for building, equipping, and maintaining public colleges and universities belonging to the states. In almost all states, the capital budgets are separate from the operating budgets. The states expanded the number and capacity of their public institutions at a very fast pace, first in the 1950's to accommodate the veterans, then in the 1960's and 1970's in response to the two-year college movement. During the late 1960's and early 1970's, the community and junior colleges were opening at the rate of one a week. With the educational facilities in place and the possibility of future enrollment declines, capital investment by the states for new construction for colleges has come to a virtual halt. Indeed, many states are operating within a planning framework oriented toward identifying and closing marginal institutions.

Each of the fifty states has a different, if not several different ways, of funding capital improvement in higher education. Practically nothing is known about overall trends in state capital appropriations for renewal and renovation of higher education facilities or the relationships between capital needs and capital resources.

Spending for education is often the largest simple component of the state budget, with higher education accounting for a large share of the education component. Higher education has to compete increasingly for funds at the state level with other social objectives.

Some state budget analysts anticipated that declining enrollments at the elementary and secondary level would lead to declining outlays for these schools, leaving more funds for higher education; but that has not happened as the public has become more concerned about the quality of these schools.

It might be anticipated that integration of the capital and operating sides of higher education could lead to the re-allocation of the state funds that were used from the 1950's until the early 1970's for expansion of plant, to the renovation of plant, the replacement of equipment and shoring up of the capital base of higher education but there is not yet evidence that this is occurring.

Federal Government Funds.

The federal government currently has a limited role in capital formation in higher education. After fostering the establishment of state colleges with federal land grants with the Morrill Act of 1865, further development was the responsibility of the states.

The federal government does provide limited amounts of loans for construction of educational facilities. This program has been expanded to include renovation.

The federal government also provides loans for dormitory construction. While students' preferences in the mid-1970's for off-campus housing led to low occupancy rates and some financial difficulties for some dormitories, the more recent trend appears to be a return to on-campus housing, possible because of the combined effects of the high cost and poor quality of available rental housing and the high cost of transportation. Thus, some institutions are now seeking financing for more dormitories.

Major increases in federal research and development funding induced institutions to expand their research facilities with federal help in the 1960's and 1970's. When federal funding slowed down, the institutions were left with expensive facilities to maintain which added to their overall financial strains.

IX. National Economic Policies to Stimulate Capital Investment

Within higher education, as we have faced the pessimistic outlook for the 1980's of declining enrollment fed by the declining population of 18-year-olds, we have failed to see that American industry as a whole has been for the last few years in a set of circumstances which could be labeled a decline.

The Changing U.S. Economy

Many significant changes took place in the U.S. economy during the 1970's -- changes which will follow us through the coming decades.

- For the first time in recent memory the U.S. faces resource scarcity, primarily in petroleum.
- The U.S. has become integrated into the world economy and is therefore subject to a broader array of economic shocks.
- Inflation approached unheard of double-digit rates, not only caused by raw materials shortages, but also caused by a defensive expectation of future inflation driving an underlying momentum. 1/
- Fiscal and monetary policies arising from Neo-Keynesian economic theories proved inadequate to the task of coping with inflation and providing a basis for sound economic expansion.

Increasing U.S. productivity and capital investment have become central concerns of the whole economic system. Business Week reported in its June 1980 issue that the U.S. standard of living has slipped from number one in 1972 to number five worldwide in 1979. During the 1970's, overall economic growth dropped to 2.9% annually as compared to 4.1% in the 1960's, and it is not simply that we are following a worldwide economic crisis.

The U.S. inflation rate was higher than the average for all industrial countries for the first time in 1979. We are doing worse than the other countries. For example, capital investment in the United States is only 10% of the GNP while it is 15% in Germany and 20% in Japan. We are in fact becoming more labor intensive rather than technology and capital intensive as is evidenced by recent capital stock increases growing at a 3% annual rate compared to the number of hours worked growing by 3.8%. Seeing the plight of industry, higher education would be foolish only to be concerned with fully utilizing its own

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1/ Barry Bosworth, "Economic Policy" in Setting National Priorities; Agenda for the 1980's, Joseph A. Peckman, Editor, Brookings Institution, pp. 25-69.

resources and keeping enrollment at a pace to utilize existing resources.

Overall, it is important that changes be sought which effectively stimulate or redirect our economy so that it can appropriately compete in today's international economic world. Higher education surely has a role to plan in the American economy's revitalization and at the very least should recognize its own problems are not separate from the problems of the economy as a whole.

National Policies to Encourage Capital Formation.

Maintaining adequate growth in productivity during the 1980's will require that a substantial share of our current resources be devoted to modernizing, replacing and expanding our capital stock. Committing significant amounts to private investment could help to reshape economic development to achieve a decline in unemployment and sustained economic growth. This makes capital formation a central, urgent concern of both the business and higher education communities.

But, while the significance to profit-oriented industry of an appropriate rate of capital formation has long been clear, the issue is only beginning to emergy in higher education and in the nonprofit sector generally. National economic policies that are designed to affect the rate of capital formation usually operate through the federal income tax structure. Consequently, these policies do not reach directly the issues surrounding capital formation in the nonprofit sector.

National economic policies to stimulate private investment -- whether through aggregate demand management, or by targeted investment incentives, tax credits, accelerated depreciation, or reduced corporate tax rates -- are all build on the federal income tax system. They are calculated to directly assist only the profit-oriented sector.

No Policy Yet for the Nonprofit Sector.

The traditional conception of the U.S. economic system is that of a two-sector economy. This conception is incomplete -- because we have in this country a three-sector economy with important functions carried out by the nonprofit sector. Higher education is a significant component of the nonprofit sector which accounts for at least one sixth of U.S. economic activity. None

of the public policies directed toward the stimulation of capital formation in the private sector through tax law changes would assist the nonprofit sector. Neither are most of the policies being discussed advantageous to productivity and capital improvement in the public sector.

Deductions in Personal Income Taxes for Charitable Contributions.

Private giving to the institutions is stimulated by provisions of the income tax laws which permit the deduction of charitable contributions from income before computing taxes for both individuals and corporations.

Proposed reforms of the income tax system to make it more simple and more equitable may, however, adversely affect private giving to higher education as a source of capital. With the steady increases in the standard deduction, more and more people are using it rather than itemizing their deductions separately. Using the standard deduction, there is no added tax benefit from private voluntary giving to the colleges and universities, which may adversely affect support. There is concerted activity, however, to secure "above-the-line" treatment of charitable contributions to education institutions to restore the tax incentives for giving.

The sharp reductions in tax rates proposed by the Reagan Administration, welcomed by almost all, may also adversely affect private giving to higher education. Though more income would be available, the tax benefits would be lower and consequently the incentives for giving would be diminished. The net effect of these offsetting factors is yet to be determined.

Impact of the Conservative Revolution.

The strength of the conservative revolution in the United States is confirmed more by the cuts in the federal budget that the Reagan Administration is getting through Congress than by the election of the new President. A major preoccupation of the higher education community is trying to estimate the impact of the budget cuts. A dominant concern, if the federal programs are severely cut, is whether students on financial aid will be able to find other sources of support, will go to lower-cost colleges, or drop out of college altogether.

The impact of the federal budget cuts is important in assessing the outlook for higher education and the consequent

need for capital investment. But in looking only at the budget cuts, higher education may be asking the wrong question. The question is not what is the impact on higher education of the budget cuts, but what is the impact of the whole economic program of the Administration on higher education, including budget cuts, tax cuts, monetary policy, and deregulation?

No sector of the economy has more to gain from halting inflation than does higher education, and the Reagan economic program may cut into inflationary expectations, though it has not done so yet. The Administration program is apparently far more successful economically. The downside risk is that higher education may be hit by both budget cuts and inflation, if supply-side economics does not work -- or takes too long to work.

X. Summary, Conclusions, and Recommendations

Higher education is a significant economic sector, in size and in contributions to national growth and prosperity.

Higher education is beginning the 1980's with a seriously eroded capital base:

- expansion of educational facilities has slowed down, but buildings and equipment need to be renewed;
- equipment used in teaching and research on the college campuses is as much as twice as old as that used in industry;
- faculty, which are the intellectual capital of the colleges and universities, are losing purchasing power faster than professional workers generally;
- financial reserves are being drawn down faster than they are being replenished.

Though the institutions are financially resilient, depletion of their capital resources will increasingly impact on the quality of their academic programs and on their ability to serve students, industry, and society as a whole.

National economic policies to stimulate capital investment in industry, which work primarily through the federal income tax structure, do not reach the nonprofit higher education institutions.

Meeting higher education capital needs requires new policies and new resources.

Specific Recommendations for the Business-Higher Education Forum follow. They Should Consider:

1. Undertaking a major baseline study of the capital stock of higher education, its location, condition, and utilization, and its adequacy for meeting U.S. educational needs in the 1980's.

2. Promoting measures to assure adequate resources for capital improvements in higher education, involving both private and public sectors.

3. Advocating greater national support for research and development.

4. Promoting industry and higher education cooperation in the research and development projects, particularly those which broaden the use of new knowledge in industrial applications which will stimulate new capital formation.

5. Supporting enhanced tax incentives to donors to promote voluntary contributions to higher education institutions.

6. Reviewing national economic policies to stimulate capital improvement to determine if the measures directed toward the private sector, particularly those operating through the tax structure and which do not reach the nonprofit education sector, should be adapted for extension to the nonprofit sector in order to maximize the total impact of those policies.

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